The listing of Claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Original) A method for detecting biomolecules *in vivo*, the method comprising:

providing labeled binding molecules *in vivo* to tissue having biomolecules, wherein the labeled binding molecules specifically binds the biomolecules;

emitting a first optical radiation into the tissue *in vivo* to excite the labeled binding molecule bound to the biomolecule *in vivo*; and

detecting, *in vivo*, a second optical radiation emitted by the excited labeled binding molecule in response to the excitation thereof.

2. (Original) A method according to Claim 1, wherein the labeled binding molecules are fluorescently labeled antibodies.

3. (Original) A method according to Claim 1, wherein the biomolecule is a tumor-associated antigen.

4. (Original) A method according to Claim 1, wherein the biomolecule is a sigma-2 receptor.

5. (Original) A method according to Claim 1, wherein the detecting step comprises transmitting a signal associated with the second optical radiation to an *ex vivo* system.

6. (Original) A method according to Claim 1, wherein the step of exciting comprises emitting the first optical radiation through a bio-fouling tissue.

7. (Original) A method according to Claim 1, wherein the step of detecting comprises detecting the second optical radiation through a bio-fouling tissue..

8. (Original) A circuit for detecting biomolecules *in vivo*, the circuit comprising

an optical radiation source configured for *in vivo* use that emits first optical radiation;

an optical radiation detector configured for *in vivo* use that detects second optical radiation emitted by excited labeled binding molecules; and

a processor circuit, coupled to the optical radiation source and the optical radiation detector, that controls the emission of the first optical radiation and that receives an intensity signal associated with the intensity of the second optical radiation and transmits a signal associated with the intensity of the second optical radiation to an *ex vivo* system.

9. (Original) A circuit according to Claim 8, wherein the optical radiation source is selected from a group consisting of a high powered LED and a laser.

10. (Original) A circuit according to Claim 8, wherein the optical radiation detector is selected from a group consisting of a phototransistor, a photodiode, and a photomultiplier.

11. (Original) A circuit according to Claim 8, wherein the first optical radiation has a first frequency and the second optical radiation has a second frequency.

12. (Original) A circuit according to Claim 11, wherein the first frequency is greater than the second frequency.

13. (Original) A circuit according to Claim 8 further comprising:

an emission filter coupled to the optical radiation source; and

an absorption filter couple to the optical radiation detector.

14. (Original) A circuit according to Claim 8, further comprising:

an inductor coupled to the processor, wherein the inductor provides power to the circuit in response to a power signal received from the *ex vivo* system.

15. (Original) A circuit according to Claim 8, wherein the circuit is on a platform having a diameter of about 2mm.

16. (Original) A circuit according to Claim 8, wherein the signal is digitally encoded via the inductor.

17. (Original) A circuit according to Claim 8, wherein the circuit is coated with a biocompatible optical translucent layer.

Claims 18-22 (Canceled).

23. (New) A system for detecting biomolecules *in vivo*, comprising:

means for providing labeled binding molecules *in vivo* to tissue having biomolecules, wherein the labeled binding molecules specifically binds the biomolecules;

means for emitting a first optical radiation into the tissue *in vivo* to excite the labeled binding molecule bound to the biomolecule *in vivo*; and

means for detecting, *in vivo*, a second optical radiation emitted by the excited labeled binding molecule in response to the excitation thereof.

24. (New) An implantable apparatus comprising:

an optical radiation source configured for *in vivo* use to emit first optical radiation to excite local fluorescently labeled binding molecules *in vivo* which are selectively bound to target biomolecules;

an optical radiation detector configured for *in vivo* use to detect second optical radiation emitted by fluorescence of the labeled binding molecules bound to the target biomolecules *in vivo* in response to excitation exposure to the first optical radiation;

a processor circuit, coupled to the optical radiation source and the optical radiation detector, that controls the emission of the first optical radiation and that receives an intensity

signal associated with the intensity of the second optical radiation and transmits a signal associated with the intensity of the second optical radiation to an *ex vivo* system; and

a supply of the fluorescently labeled binding molecules configured to be excited by the first optical radiation, the supply being encapsulated by a material that dissolves over time to release the fluorescently labeled binding molecules *in vivo* proximate to the target biomolecules to which the fluorescently labeled binding molecules are configured to bind.

25. (New) An apparatus according to Claim 24, wherein the optical radiation source emits the first optical radiation through a bio-fouling tissue.

26. (New) An apparatus according to Claim 24, wherein the optical radiation sensor detects the second optical radiation through a bio-fouling tissue.

27. (New) An apparatus according to Claim 24, further comprising a platform having a diameter of about 2.0 mm on which the processor circuit, the optical radiation source, and the optical radiation detector are mounted.

28. (New) An apparatus according to Claim 24, wherein the supply of the fluorescently labeled binding molecules is located on a platform with the optical radiation source, the optical radiation detector, and the processor circuit.